

REMARKS

STATUS OF THE CLAIMS:

Claims 1-12 are pending.

Claims 1, 2, 4, 5, 7, 8, 10 and 11 are rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 3, 7 and 9 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Solheim et al., U.S. Patent No. 5,896,391, hereinafter referred to as "Solheim," in view of Han et al., U.S. Patent No. 6,822,214, hereinafter referred to as "Han."

Claims 4, 6, 10 and 12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Solheim, in view of Han in further view of Bruce et al., U.S. Patent No. 6,519,302, hereinafter referred to as "Bruce."

In accordance with the foregoing, the claims are amended, and, thus, the pending claims remain for reconsideration, which is respectfully requested.

No new matter has been added.

The Examiner's rejections are respectfully traversed.

35 U.S.C. § 112, SECOND PARAGRAPH REJECTIONS:

The Office Action rejects claims 1, 4, 7, and 10 because, allegedly, "the claimed 'average' cannot be a single number if it has both a minimal value and a maximal value." In accordance with the foregoing, the claims are amended, taking into consideration the Examiner's comments. Claim 1, for example, recites, in part, "changing an identification level supplied to the limiter amplifier between a lower bound and an upper bound thereof and storing a respective average of an output of the limiter amplifier corresponding to each identification level together with the identification level; setting a first average between a minimal value of the respective averages and a predefined value and a second average between a maximal value of the respective averages and the predefined value." As seen in the specification, there is a single average for each identification level, and, thus, the respective averages are defined for a plurality of identification levels. Accordingly, Applicants respectfully submit that claims 1, 4, 7 and 10 comply with the requirements of 35 U.S.C. § 112, second paragraph. Accordingly, Applicants respectfully request withdrawal of the claim rejection.

The Office Action rejects claims 2, 5, 8 and 11 because, allegedly, "the claims are indefinite because it's unclear what '0%', '100%', '25%' and '75%' are percentages of." In accordance with the foregoing, the claims are amended, taking into consideration the Examiner's comments. Applicants respectfully submit that claims 2, 5, 8 and 11 comply with the requirements of 35 U.S.C. § 112, second paragraph. Accordingly, Applicants respectfully request withdrawal of the claim rejection.

The Office Action rejects claims 4 and 10 because, allegedly, the claims are indefinite because the scope of ['a feature similar to the limiter amplifier'] is unclear." In accordance with the foregoing, the claims are amended, taking into consideration the Examiner's comments. Applicants respectfully submit that claims 4 and 10 comply with the requirements of 35 U.S.C. § 112, second paragraph. Accordingly, Applicants respectfully request withdrawal of the claim rejection.

35 U.S.C. § 103(a) REJECTIONS:

Independent claims 1 and 7 are allegedly unpatentable over Solheim in view of Han.

The Office Action relies upon Solheim to disclose the claimed "changing an identification level supplied to the limiter amplifier between a lower bound and an upper bound thereof and storing a respective average of an output of the limiter amplifier corresponding to each identification level together with the identification level; setting a first average between a minimal value of the respective averages and a predefined value and a second average between a maximal value of the respective averages and the predefined value, said predefined value being between the minimal value and the maximal value, and obtaining a first identification level corresponding to the first average and a second identification level corresponding to the second average," as recited, for example, in amended claim 1. Support for the claim amendments can be found, for example, in the Specification at page 12, line 1 to page 16, line 12. The Office Action, at item 4, asserts that Solheim, at column 6, lines 5-17, discloses the same.

Applicants respectfully disagree with the assertion, because Solheim, at column 6, lines 5-17, recites:

The control circuit 16 operates in an error mapping mode, an optimization mode, or a data regeneration mode. In the error mapping mode, the control circuit 16 generates sets of threshold and phase values using any suitable method, and receives the resulting raw BER from the error detection circuit 20. For example, **control circuit 16 varies the threshold V_{th} applied to comparator 10 in increments from V_1 to V_{10} as shown in the example illustrated in FIG. 2. In the meantime, control circuit 16 varies the phase Φ of the signal applied on the CL input of flip-flop 12 in increments**

from Φ_1 to Φ_{16} . The BER is measured for each pair (V_i, Φ_j) and stored in memory 18. In order to minimize the time spent at high raw error rate conditions, the mapping of the received eye is only being done on a periodic basis, once a day or at start-up.

(emphasis added)

In other words, error detection block 20 detects an error rate (BER) for each pair (V, Φ) as illustrated in the contour graph of FIG. 2, and stores the detected error rates in memory 18. From the contour graph of FIG. 2, it is obvious that the two parameters V and Φ are varied independent of each other within the range of V_1 to V_{10} and Φ_1 to Φ_{16} , respectively.

In contrast, the embodiment according to claim 1 uses two parameters, an "identification level" and a "respective average" which corresponds to an identification level. Accordingly, one skilled in the art would recognize that the "identification level" and the respective average cannot be varied independent of each other. That is, for each "identification level," a single "respective average" is uniquely determined. In other words, the "respective average" depends on the corresponding "identification level."

Accordingly, the Applicants respectfully submit that the claimed parameters, the "identification level" and the "respective average," completely differ from the threshold V and phase Φ of Solheim. Furthermore, as seen in FIG. 2 of Solheim, Solheim uses the horizontal axis "phase", whereas, in contrast, in FIG. 6, for example, of the present application uses the horizontal axis "time."

Furthermore, Applicants respectfully submit that Solheim fails to disclose, either expressly or implicitly, the claimed "and obtaining a first identification level corresponding to the first average and a second identification level corresponding to the second average; and computing an optimal identification level based on the first identification level and the second identification level." In other words, Solheim fails to disclose, either expressly or implicitly, to use the "averages" of the claimed embodiment to determine an optimal identification level, because Solheim merely discusses detecting an error rate (BER) for each independently variable pair (V_i, Φ_j), and, thus, fails to disclose using the first and second averages to obtain the first and second identification levels, respectively.

The Office Action relies upon Han merely to discuss an optical receiver and an amplifier, and, thus, Applicants respectfully submit that Han fails to correct the deficiencies of Solheim.

Accordingly, Applicants respectfully submit that a *prima facie* case of obviousness cannot be based upon Solheim and Han, because Solheim, Han and any combination thereof fails to disclose, either expressly or implicitly, the claimed "changing an identification level supplied to the limiter amplifier between a lower bound and an upper bound thereof and storing a respective

average of an output of the limiter amplifier corresponding to each identification level together with the identification level; setting a first average between a minimal value of the respective averages and a predefined value and a second average between a maximal value of the respective averages and the predefined value, said predefined value being between the minimal value and the maximal value, and obtaining a first identification level corresponding to the first average and a second identification level corresponding to the second average," as recited, for example, in claim 1, because Solheim merely discusses detecting an error rate (BER) for each independently variable pair (V_i , Φ_j).

Futhermore, Applicants respectfully submit that there is no evidence that one skilled in the art would modify Solheim, Han or a combination of Solheim and Han to include the claimed "changing an identification level supplied to the limiter amplifier between a lower bound and an upper bound thereof and storing a respective average of an output of the limiter amplifier corresponding to each identification level together with the identification level; setting a first average between a minimal value of the respective averages and a predefined value and a second average between a maximal value of the respective averages and the predefined value, said predefined value being between the minimal value and the maximal value, and obtaining a first identification level corresponding to the first average and a second identification level corresponding to the second average," as recited, for example, in claim 1.

Independent claim 7 is directed to a optical receiver, including:

- a change part changing an identification level supplied to the limiter amplifier between a lower bound and an upper bound thereof;

- a storage part storing a respective average of an output of the limiter amplifier corresponding to each identification level together with the identification level; and

- a computation part setting a first average as a minimal value of the respective averages and a predefined value and a second average between a maximal value of the respective averages and the predefined value, said predefined value being between the minimal value and the maximal value, obtaining a first identification level corresponding to the first average and a second identification level corresponding to the second average, computing an optimal identification level based on the first identification level and the second identification level, and supplying the optimal identification level to the limiter amplifier.

Accordingly, Applicants respectfully submit that claim 7 patentably distinguishes over the cited references.

Independent claims 4 and 10 are allegedly unpatentable over Solheim, Han and Bruce.

In accordance with the foregoing, claim 4 is amended to recite “changing an identification level supplied to a monitoring limiter amplifier between a lower bound and an upper bound thereof, said monitoring limiter amplifier configured similarly to the limiter amplifier and receiving the electric signal, and storing a respective average of an output of the monitoring limiter amplifier corresponding to each identification level together with the identification level; setting a first average between a minimal value of the respective averages and a predefined value and a second average between a maximal value of the respective averages and the predefined value, said predefined value being between the minimal value and the maximal value, and obtaining a first identification level corresponding to the first average and a second identification level corresponding to the second average; and computing an optimal identification level based on the first identification level and the second identification level and supplying the optimal identification level to the limiter amplifier.” Support for the claim amendments can be found, for example, in the Specification at page 12, line 1 to page 16, line 12.

The Office Action, at item 6, relies upon Bruce merely to discuss a “monitoring circuit,” and, thus, Applicants respectfully submit that Bruce fails to correct the deficiencies of Solheim and Han.

Accordingly, Applicants respectfully submit that a *prima facie* case of obviousness cannot be based upon Solheim, Han and Bruce, because Solheim, Han, Bruce and any combination thereof fails to disclose, either expressly or implicitly, the claimed “changing an identification level supplied to a monitoring limiter amplifier between a lower bound and an upper bound thereof, said monitoring limiter amplifier configured similarly to the limiter amplifier and receiving the electric signal, and storing a respective average of an output of the monitoring limiter amplifier corresponding to each identification level together with the identification level; setting a first average between a minimal value of the respective averages and a predefined value and a second average between a maximal value of the respective averages and the predefined value, said predefined value being between the minimal value and the maximal value, and obtaining a first identification level corresponding to the first average and a second identification level corresponding to the second average; and computing an optimal identification level based on the first identification level and the second identification level and supplying the optimal identification level to the limiter amplifier,” as recited, for example, in claim 4, because Solheim merely discusses detecting an error rate (BER) for each independently variable pair (V_i , Φ_j).

Futhermore, Applicants respectfully submit that there is no evidence that one skilled in the art would modify Solheim, Han, Bruce or a combination of Solheim, Han and Bruce to include the claimed "changing an identification level supplied to a monitoring limiter amplifier between a lower bound and an upper bound thereof, said monitoring limiter amplifier configured similarly to the limiter amplifier and receiving the electric signal, and storing a respective average of an output of the monitoring limiter amplifier corresponding to each identification level together with the identification level; setting a first average between a minimal value of the respective averages and a predefined value and a second average between a maximal value of the respective averages and the predefined value, said predefined value being between the minimal value and the maximal value, and obtaining a first identification level corresponding to the first average and a second identification level corresponding to the second average; and computing an optimal identification level based on the first identification level and the second identification level and supplying the optimal identification level to the limiter amplifier," as recited, for example, in claim 4, because Solheim merely discusses detecting an error rate (BER) for each independently variable pair (V_i , Φ_j).

Independent claim 10 is directed to an optical receiver, including:

- a monitoring limiter amplifier configured similarly to the limiter amplifier and receiving the electric signal;

- a change part changing an identification level supplied to the monitoring limiter amplifier between a lower bound and an upper bound thereof;

- a storage part storing a respective average of an output of the monitoring limiter amplifier corresponding to each identification level together with the identification level; and

- a computation part setting a first average between a minimal value of the respective averages and a predefined value and a second average between a maximal value of the respective averages and the predefined value, said predefined value being between the minimal value and the maximal value, obtaining a first identification level corresponding to the first average and a second identification level corresponding to the second average, computing an optimal identification level based on the first identification level and the second identification level, and supplying the optimal identification level to the limiter amplifier

Accordingly, Applicants respectfully submit that claim 10 patentably distinguishes over the cited references.

Dependent claims recite patentably distinguishing features of their own or are at least patentably distinguishing due to their dependence from the independent claims.

For example, Applicants respectfully submit that Solheim, Han and Bruce, fail to disclose, either expressly or implicitly, the claimed "wherein the optimal identification level is set between $0.3(l_{d1} + l_{d2})$ and $0.4(l_{d1} + l_{d2})$, wherein the first identification level and the second identification level are represented by l_{d1} and l_{d2} , respectively," as recited in dependent claim 3, because Solheim, Han and Bruce fail to disclose the claimed "first identification level" and "second identification level," as discussed above.

Withdrawal of the rejection of pending claims, and allowance of pending claims is respectfully requested.

CONCLUSION

Because Claims 2, 5, 8, and 11 are not rejected over any prior art, and applicants respectfully submit that claims 2, 5, 8, and 11 comply with the requirements of 35 U.S.C. §112, second paragraph, and applicants respectfully submit that claims 2, 5, 8, and 11 are in condition for allowance.

Further, there being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.


Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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